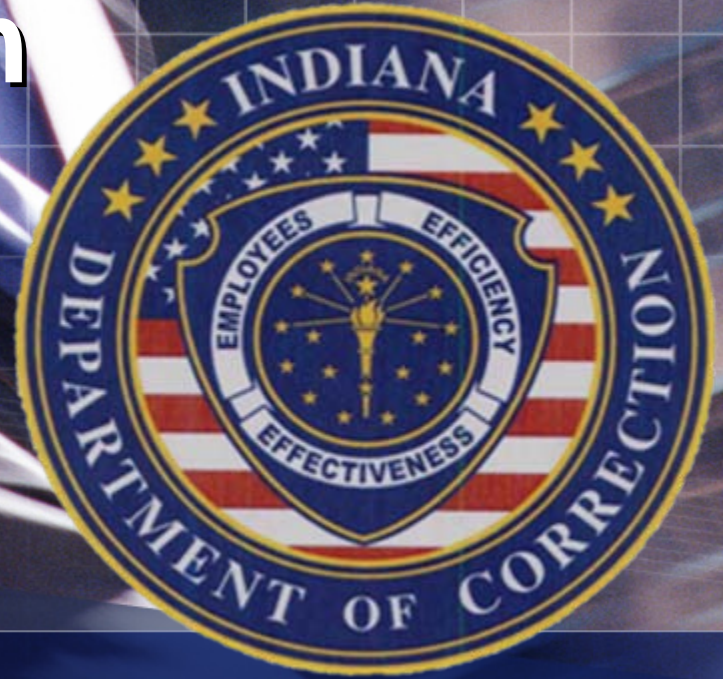


The Indiana Department of Correction

presents



New Employee Orientation: Hazardous Materials

Performance Objectives:

1. Identify the information listed on a Material Safety Data Sheet.
2. Identify lockout and tagout procedures.
3. Identify the five classes of fires.
4. Identify the five types of fire extinguishers.

Hazardous Materials

Right to Know Law

In the past, workers were not always aware of the hazardous materials they might come into contact with on the job. In many cases, container labels and warning sheets did not give enough information about hazardous materials. Today, new laws and regulations have been enacted to help employees stay safe on the job. One of these laws is the employee “Right To Know Law” (OSHA 29, CFR 1910-1200). This law affects every organization that uses hazardous materials. The law requires employers to take steps to ensure that employees are made aware of the hazardous materials being used on the job.

Health Hazards

Health Hazard is the possibility that exposure to a material will cause injury or harm. Toxic Action of a substance can be divided into two types:

- 1. Acute – short term high concentrations which causes illness, irritation, or death. Usually acute effects are related to an accident (spill) or lack of effective controls.**
- 2. Chronic – occurs after continued exposure over long periods. The body accumulates substances which injures body cells and serious irreversible damage may occur.**

Key elements to be considered when evaluating health hazards are:

- 1. Amount of material required to cause the injury.**
- 2. Probability of absorption from contact.**
- 3. Total time of contact.**
- 4. Control measures in use.**

Chemicals Are Hazardous To Human Health In Two Ways

- Materials that attack the body externally (corrosives, cryogenics, and flammables).
- Materials that attack the body internally (irritants, asphyxiates and carcinogens).

Modes of Internal Entry

1. Ingestion – the least common as far as occupational hazards are concerned.
 - Careless washing
 - Smoking
 - Eating
2. Skin Absorption – the most common as far as occupational hazards are concerned.
 - Spills
 - Leaks
 - Mishandling of materials
3. Inhalation – the most critical because of the speed in which a substance can reach the lungs, pass into the bloodstream and reach the brain.

Signs and Symptoms of Exposure

1. Internal Exposure

- Confusion, light-headedness, anxiety, and dizziness
- Blurred vision
- Changes in skin color or blushing
- Coughing or painful respiration
- Tingling or numbness of extremities
- Loss of coordination
- Nausea, vomiting, abdominal cramping, diarrhea
- Unconsciousness

Signs and Symptoms of Exposure

2.External Exposure

- Pain on contact with the skin
- Greasy slick feeling on the skin
- Burning around the eyes, nose, or mouth
- Nausea and vomiting
- Localized burning or skin irritation

Material Data Safety Sheet

A Material Safety Data Sheet (MSDS) is a document that contains information on the potential health effects of exposure to chemicals, or other potentially dangerous substances, and on safe working procedures users should adhere to when handling chemical products.

Material Data Safety Sheet

The Safety Hazard Manager at each facility is responsible for maintaining a master file of Material Safety Data Sheets on all products used at their facility. A duplicate Master File will also be maintained and located in the Medical Department.

Employees are required to know the hazards of the products they may use. Any employee who may be exposed to a hazardous product has a right to read the MSDS. A copy of MSDS sheet may be obtained by staff making a written request to the Safety Hazard Manager.

Material Data Safety Sheets Provide The Following Information

- Manufacturer's name, address, emergency telephone number, and the date the MSDS was prepared.
- How to use, store and handle the product.
- Hazardous ingredients, chemical components and common names. This is where you will find the permissible exposure limits.
- Physical and chemical characteristics, i.e. appearance and odor under normal conditions.
- Physical hazards, such as fires and explosive hazards, and ways to handle these hazards.

Material Data Safety Sheets Information

- Reactivity information tells you whether the substance is stable, and what other substances must be kept separated.
- Health hazards of the substance, which is the most important section to the employee. This section describes how the chemical could enter the body and the possible hazards of exposure. This section also lists the signs and symptoms of exposure, as well as emergency and first aid procedures.
- Spill and leak procedures
- Personal Protection equipment needs

Labeling

Manufacturer's labels must be kept intact on the container at all times. If torn, or defaced, or removed it must be replaced immediately.

Chemical containers may contain an NFPA 704 label. This label explains the following:

- Chemical Identity – Product name.
- Health Hazard – 0 to 4 – Blue – shows degree of acute health hazard.
- Flammability – 0 to 4 – Red – shows susceptibility of materials to burning.
- Reactivity – 0 to 4 – Yellow – shows susceptibility to react and release energy.
- Specific Hazard – White – shows specific hazards. Specific hazards would include such things as oxidizers, acids, alkalis, corrosives, etc.

NFPA 704 Labeling System for Chemicals

NFPA 704 Labeling System for Chemicals

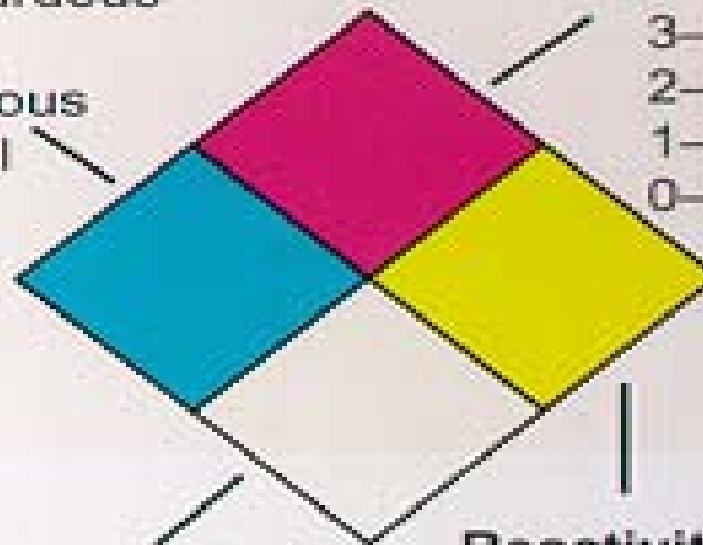
Health Hazard

- 4—Deadly
- 3—Extremely Hazardous
- 2—Hazardous
- 1—Slightly Hazardous
- 0—Normal Material

Fire Hazard

Flash Points

- 4—Below 73°F
- 3—Below 100°F
- 2—Below 200°F
- 1—Above 200°F
- 0—Will Not Burn



Specific Hazard

- Oxidizer
- Acid
- Alkali
- Corrosive
- Use NO WATER
- Radiation Hazard

- OX
- ACID
- ALK
- COR
- W
- 

Reactivity

- 4—May Detonate
- 3—Shock and Heat
May Detonate
- 2—Violent Chemical Change
- 1—Unstable If Heated
- 0—Stable

Labeling-Hazardous Materials Identification System

Chemical containers may also have a Hazardous Materials Identification System (HMIS) label. The color and numbering coding are identical to the NFPA 704; however, the HMIS uses a colored bar system instead of the diamond. HMIS deals more with chronic hazards and NFPA 704 deals with more acute hazards.

Hazardous Material Identification System/Guide

HAZARDOUS MATERIAL IDENTIFICATION GUIDE

TYPE HAZARD	HEALTH	DEGREE	4 - Extreme
	FLAMMABILITY		3 - Serious
	REACTIVITY		2 - Moderate
	PROTECTIVE EQUIPMENT		1 - Slight
HAZARD RATING	Health	Flammability	Reactivity
PROTECTIVE EQUIP.	A	E	I
	B	F	J
	C	G	K
	D	H	X

Controlling Hazardous Materials

- Only authorized staff will issue flammable, caustic, or toxic materials.
- Only the amount of materials necessary for the immediate use will be issued.
- All offenders using hazardous materials will be closely supervised.
- All hazardous substances will be accounted for before, during, and after use. All receipts and issues will be on the "Flammable Toxic & Caustic Inventory Issue Log".

Lockout and Tagout Procedures

Lockout/Tagout

Lockout/Tagout refers to specific practices and procedures to safeguard employees from the unexpected startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.

Approximately 3 million workers service equipment and face the risk of injury if lockout/tagout is not properly implemented. Compliance with the lockout/tagout standard prevents an estimated 120 fatalities and 50,000 injuries each year.

Lockout/Tagout

Lockout/Tagout requires that a designated individual turns off and disconnects the machinery or equipment from its energy source(s) before performing service or maintenance. Authorized employee(s) either lock or tag the energy-isolating device(s) to prevent the release of hazardous energy and take steps to verify that the energy has been isolated effectively.

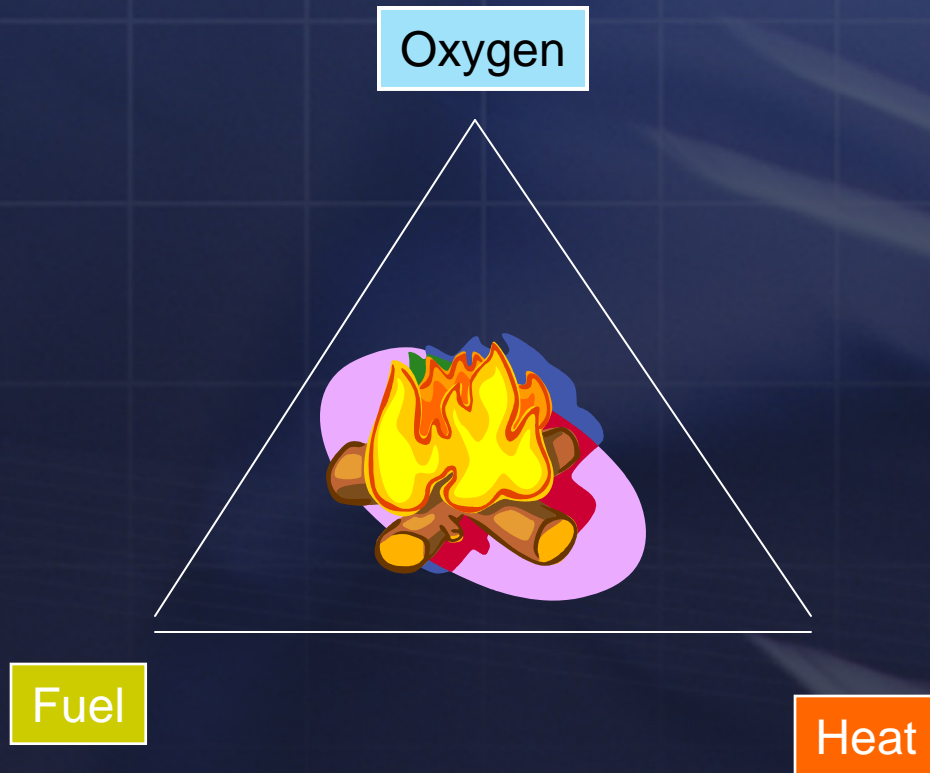
Lockout/Tagout Procedures

Lockout and Tagout devices should be removed by the individual who originally placed the lockout/tagout device. If the employee who applied the device is unavailable, it may only be removed after management has verified that the employee is not available and has ensured that it is safe to remove the device. Management must then make all reasonable efforts to contact the employee and inform him/her that the device has been removed.

Fire Safety

The Fire Triangle

The “Fire Triangle” identifies three (3) elements that must be present for a fire to exist. They are:



Fuel is a vital component of the triangle. Examples of fuel are:

Solid: Wood

Liquid: Flammable Liquids

Gas: Propane

Ordinary Combustible: Animal Fat or Vegetable Oil

Fire Classification

Fires are classified by fuel type.
There are five (5) classes of fires.

Class A Ordinary Combustibles

Class B Flammable Liquids

Class C Electrical

Class D Combustible Metals

Class K Animal Fat or Vegetable Oil

Fire Extinguishers

Fire extinguishers are the most visible forms of fire control equipment. It is important to be familiar with the five (5) types of extinguishers.

Class A Fire Extinguisher

- Uses pressurized water for use on solid combustible fuel fire
- Extinguishing agent (water) works by cooling and absorbing heat

Class B Fire Extinguisher

- Uses dry chemicals for use on flammable liquids
- Extinguishing agent (dry chemical) displaces oxygen and smothers the fire

Class C Fire Extinguisher

- Uses dry chemicals for use on electrical fires
- Extinguishing agent (carbon dioxide) displaces oxygen and smothers the fire

Fire Extinguishers

Class D Fire Extinguisher

- Uses dry powder for use on combustible metals

Class K Fire Extinguisher

- Uses dry or wet chemical for use on animal fat or vegetable oil

Fire extinguishers can be rated for multiple fire classes. An example of this is the ABC fire extinguisher. The ABC fire extinguisher can be used on A, B, and C classes of fires.



P.A.S.S. Method:

The method used to fight a fire with a fire extinguisher is called the P.A.S.S. method.

P.A.S.S. Method:

P=Pull the pin

A=Aim at the base of the fire

S=Squeeze the handle

S=Sweep the base of the fire

Fire Safety Procedures:

Rescue-move any person who is in immediate danger

Alarm-pull the alarm

Confine-keep the fire confined if you can, this could include shutting doors to the room where the fire is located

Extinguish-put the fire out if you can

You have now completed *New Employee Orientation: Hazardous Materials* module.

Please advance to the next module.

